

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/CA2004/001870

**Box No. I**      **Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)**

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
  - a. type of material:
    - ☒ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☒ in written format
    - ☒ in computer readable form
  - c. time of filing/furnishing:
    - ☒ contained in the international application as filed
    - ☒ filed together with the international application in computer readable form
    - ☐ furnished subsequently to this Authority for the purposes of search
2. ☒ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statement that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

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### Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of the first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons :

7. ☒ Claim Nos. : 41-100  
because they relate to subject matter not required to be searched by this Authority, namely :

Remark: Although claims 41-100 are directed to use of the delivery system and methods thereof for treatment of skin disorders and metabolic diseases in an human or animal subject which this Authority is not obliged to search under Rule 39.1(iv) of the PCT, the search has been carried out based on the alleged effects and use of the delivery system.

8. ☐ Claim Nos. :  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically :

9. ☐ Claims Nos. :  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

### Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows :

10. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
11. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
12. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claim Nos. :
13. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim Nos. :

Remark on Protest

☐  
☐

The additional search fees were accompanied by the applicant's protest.  
No protest accompanied the payment of additional search fees.

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7: A61K 48/00; A61K 47/44; A61K 9/06; A61K 38/21; A61P 17/00; A61K 31/7088

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
A61K 48/00; A61K 47/44; A61K 9/06; A61K 38/21; A61P 17/00; A61K 31/7088

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Canadian Patent Database, Delphion, Pubmed, USPTO, STN

Search terms: cationic, gemini, dimeric, surfactant, detergent, bis-surfactant, DNA, gene, nucleic acid, transfection, gene therapy, DNA vaccine

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
Y	McGREGOR C ET AL 4 Jul 2001 Rational approaches to the design of cationic gemini surfactants for gene delivery. J AM CHEM SOC 123(26):6215-6220  Whole document	1-100
Y	RON SIN G ET AL 7 Nov 2001 Novel spermine-based cationic gemini surfactants for gene delivery. CHEM COMMUN (CAMB) 7(21):2234-2235  Whole document	1-100

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

\* Special categories of cited documents:  
"A" document defining the general state of the art which is not considered to be of particular relevance  
"E" earlier application or patent but published on or after the international filing date  
"L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)  
"O" document referring to an oral disclosure, use, exhibition or other means  
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone  
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art  
"&" document member of the same patent family

Date of the actual completion of the international search  
31 January 2005 (31-01-2005)

Date of mailing of the international search report  
02 March 2005 (02-03-2005)

Name and mailing address of the ISA/CA  
Canadian Intellectual Property Office  
Place du Portage I, C114 - 1st Floor, Box PCT  
50 Victoria Street  
Gatineau, Quebec K1A 0C9

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
Y	WO9929712 SMITHKLINE BEECHAM PLC (Camilleri P et al) 17 Jun 1999  Examples 17-19	1-100
Y	VOGEL JC 1 Nov 2000 Nonviral skin gene therapy. HUMAN GENE THERAPY 11:2253-2259  Whole document	1-100
Y	SAPADIN AN & FLEISCHMAJER R Jan 2002 Treatment of scleroderma. ARCH DERMATOL 138(1):99-105  Whole document	1-100
Y	CHOI MJ & MAIBACH HI Sep-Oct 2003 Topical vaccination of DNA antigens: topical delivery of DNA antigens. SKIN PHARMACOL APPL SKIN PHYSIOL 16(5):271-282  Whole document	12-20, 32-46, 52-60, 72-80, 92-100

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.  
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Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
WO9929712	17-06-1999	CA2312941 A1	17-06-1999
		EP1037903 A1	27-09-2000
		GB9726073D D0	04-02-1998
		JP2001525419T T	11-12-2001
		US6693167 B1	17-02-2004
		US2004043939 A1	04-03-2004
		WO9929712 A1	17-06-1999